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APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A
FILING DATE.

APPLICATION NUMBER: 60/442,391

FILING DATE: January 24, 2003

RELATED PCT APPLICATION NUMBER: PCT/US04/01793

By Authority of the
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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

Express Mail Label No. EV140707086

JC972 U.S. PRO
60/442391

INVENTOR(S)

Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)
Jesse G.	Cogswell	Torrance, California USA

Additional inventors are being named on the _____ separately numbered sheets attached hereto

TITLE OF THE INVENTION (500 characters max)

BLADE RING SAW BLADE

Direct all correspondence to:

CORRESPONDENCE ADDRESS

Customer Number

Type Customer Number here

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OR

<input checked="" type="checkbox"/> Firm or Individual Name	BIRCH, STEWART, KOLASCH & BIRCH, LLP			
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ENCLOSED APPLICATION PARTS (check all that apply)

Specification Number of Pages

CD(s), Number

Drawing(s) Number of Sheets

1

Other (specify)

Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT

Applicant claims small entity status. See 37 CFR 1.27.

FILING FEE
AMOUNT (\$)

A check or money order is enclosed to cover the filing fees

02-2448

\$80.00

The Commissioner is hereby authorized to charge filing
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The invention was made by an agency of the United States Government or under a contract with an agency of the
United States Government.

No.

Yes, the name of the U.S. Government/Agency and the Government contract number are: _____

Respectfully submitted,

SIGNATURE

Date 01/24/03

TYPED or PRINTED NAME Thomas M. Small

REGISTRATION NO.
(if appropriate)
Docket Number:

20,379

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5903-1012

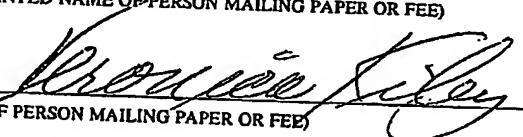
USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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Inventor: Jesse G. Cogswell
File No.: 5903-1012
Title: BLADE RING SAW BLADE

Enclosed with this "Certificate of Mailing By Express Mail" for filing are:

1. Provisional Application for Patent Transmittal Cover Sheet
(Applicant claims Small Entity Status)
2. Specification: (5 pages)
Title of Invention
Background of Invention;
Brief Summary of Invention;
Brief Description of Drawings;
Detailed Description;
Claims.
3. 1 Sheet of Drawings
4. Check in amount of \$80 (Small Entity) to cover cost of filing
5. Return Receipt Postcard

PROVISIONAL APPLICATION UNDER 37 CFR 1.53(b)(2)

Title: BLADE RING SAW BLADE

Inventor: Jesse G. Cogswell

Background of the Invention

This invention relates to abrasive saw blades of the type having a narrow, substantially flat-sided annular body typically composed of metal, an open central portion and an outer peripheral surface coated with an abrasive. The typical abrasive is a coating of powdered diamond particles applied in a sintering process and covering not only the outer periphery but also a portion of each flat side of the blade along the periphery. A saw assembly using blades of this type is shown in my pending U.S. application Serial No. 09/913,214, filed August 8, 2001 and entitled BLADE RING SAW ASSEMBLY.

Saws of the type shown in the above-identified application support the ring-shaped blade around its inner and outer peripheries and rotate the blade at high speed to cut a workpiece with the abrasive-coated outer periphery. Because the blade is narrow and the interior of the blade is open, the workpiece can be turned during the cutting operation and moved within the blade to cut along irregular, curving paths. A typical use of such a blade is for cutting very hard materials such as tile. The flat-sided ring has sufficient strength to be driven through the tiles at substantial cutting rates. Details of construction and operation of such a saw assembly are shown and described in the above-identified application, and have been made public through the advertising and sale of such saw assemblies by Gemini Saw Company, of Torrance, California, under the trademark "Revolution."

An earlier, lighter duty saw shown in Patent No. 4,576,139, entitled "Rigid Wire Saw Wheel Apparatus For Very Hard Materials," uses a diamond-coated wire ring that is supported and driven in a generally similar manner. This saw is designed for sawing glass and ceramics, but is not well-suited for heavy duty cutting because limited cutting speed. With the flat-sided ring blade of the pending application, much greater cutting pressure can be applied and curved cuts can be made, although not as sharply curved as with a wire blade.

Summary of The Invention

This invention resides in an improved flat-sided blade for blade ring saws in which the inner periphery of the ring and at least a portion of each flat side along the inner periphery also are covered with an abrasive coating, which protects the inner peripheral portion of the blade ring body from wear through contact with workpieces and, at the same time, utilizes the inner portion of the body as a grinder during the cutting of curves. This provides a smoother cutting action, a better finish on the workpiece, and the capability to cut much tighter curves. In essence, the trailing portion grinds in the opposite lateral direction from the leading portion during turning, thereby creating additional clearance for turning. Also, it is possible with such a blade to cut backwards, using the inner periphery as the leading edge.

The preferred embodiment of the invention has a sintered coating on the outer peripheral portion, as shown in the above-identified application, covering part of each flat side along the outer periphery, and an electroplated diamond abrasive coating covering the inner periphery and the remainder of the unsintered body of the blade. The sintered coating is believed to provide a thicker coating with greater abrading capacity to perform the primary cutting function of the blade, and electroplating typically provides a thinner abrasive coating which does not wear away as quickly and therefore effectively protects the metal body while providing the edge-finishing function. Other coatings and coating patterns may be used, however, and the particular coating and patterns that are shown and described are not to be regarded as limitations.

Brief Description of The Drawings

FIGURE 1 is a schematic side elevation of a representative blade, not to scale; and FIG. 2 (VIEW A) is an enlarged transverse cross-section along line 2-2 of FIG. 1.

Detailed Description

Shown in the drawings for purposes of illustration is the presently preferred embodiment of a saw blade 10 for a blade ring saw assembly as shown in the above-identified application and as sold by Gemini Saw Company as the "Revolution." The description in the pending application is incorporated by this reference.

As shown in the drawings, the blade 10 has an annular metal body 11 of suitable tool metal, preferably a carbon steel alloy, having substantially flat sides 12 between circular outer and inner peripheral edges 13 and 14, respectively, the inner peripheral edge defining a large open central portion of the blade.

The outer peripheral edge is covered with an abrasive coating 15 which preferably is a sintered powdered diamond coating that extends partially over each side 12, and the outer peripheral edge 13 of the body 11 preferably is of reduced thickness within the sintered coating, to receive a substantially greater wearable coating. The portion of reduced thickness is thin enough to be worn away with the diamond coating in service use.

In accordance with the present invention, the inner periphery is covered with an abrasive coating 17 that protects the metal body 11 against excessive wear and smooths the contact of the blade 10 with workpieces, both for a finer finish on the workpieces and for smoother operation of the saw. While this coating may take various forms, including a sintered coating (not shown), the preferred coating is an electroplated diamond coating, shown as covering all of the body of the blade that is not covered by the sintered coating 15 on the outer periphery. For functional purposes, the most important portion of the coating 17 is along both sidewalls close to the inner periphery, and secondarily on the inner edge 14 itself. It is convenient, however, simply to electroplate all of the body 11 that is not covered by the sintered layer, as shown.

Blades for this type of saw assembly can be made in various sizes according to the parameters set forth in the above-identified application. As an example, not to be considered a limitation, a suitable blade 10 can have an outside diameter of approximately ten inches, an inside diameter of approximately nine and one-quarter inches, a metal body or core approximately 0.05 inches thick, reduced to approximately 0.01 inches thick in the portion 16 in the sintered diamond layer 15, which may have a total thickness of approximately 0.65 inches and covers about one-half the radial width of the body. The electroplated coating 17 covers the remainder of the body 11, to a thickness that should not be greater than the thickness of the sintered portion 15 on the same side of the body, and may be slightly thinner so as to fit closely within the space, or "kerf", cut in a workpiece during a straight cut, to avoid unnecessary enlargement of the kerf.

Upon turning of the workpiece relative to the blade to cut a curve, the trailing inner peripheral portion will swing out, relative to the direction of curvature, as the opposite side of the leading portion swings in, thereby moving into engagement with the sidewall of the workpiece that has been formed by the cutting action of the leading edge. This occurs in both directions of curvature, and produces a smoother cutting action of the blade 10 as well as a finishing or smoothing operation on the sidewalls of the workpiece.

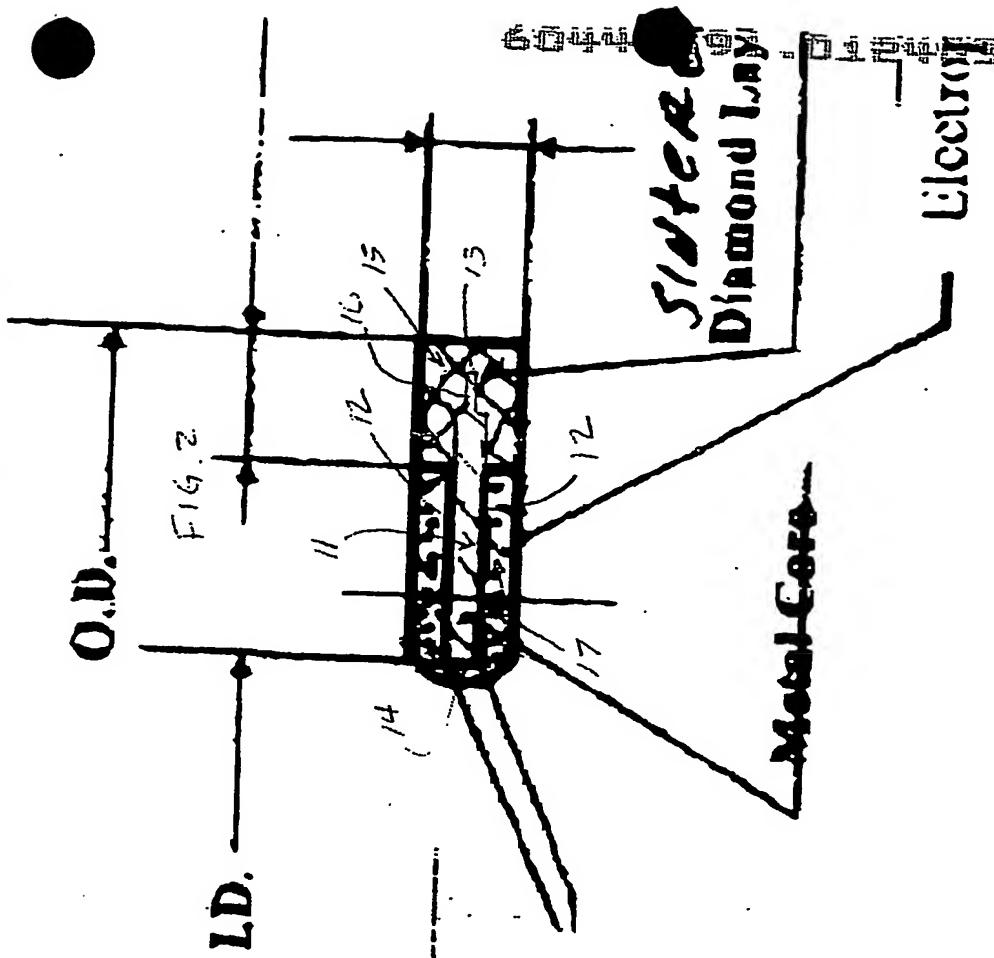
Further providing an abrasive coating on the inner peripheral edge 14 provides the blade 10 with the ability to cut reversely as well, during which the outer coating serves the smoothing and finishing function performed by the inner coating 17 during forward operation. This is a bonus value of the blade, which is intended for one-direction cutting movement as its primary function.

It is to be noted that a variety of different dimensions can be provided for a saw blade of this type, and a variety of abrasive coatings may be provided, all within the knowledge of those who are skilled in this art.

Claims

1. A blade ring saw blade substantially as described.
2. A blade ring saw blade of the type claimed in the above application having a substantially flat-sided core and, in addition, an abrasive coating on the sidewalls of the core along the inner periphery of the core to swing into contact with the workpiece during the cutting of curves.
3. A blade ring saw blade as defined in claim 2 further including an abrasive coating covering the inner peripheral edge of the blade.

VIEW A



VIEW A

